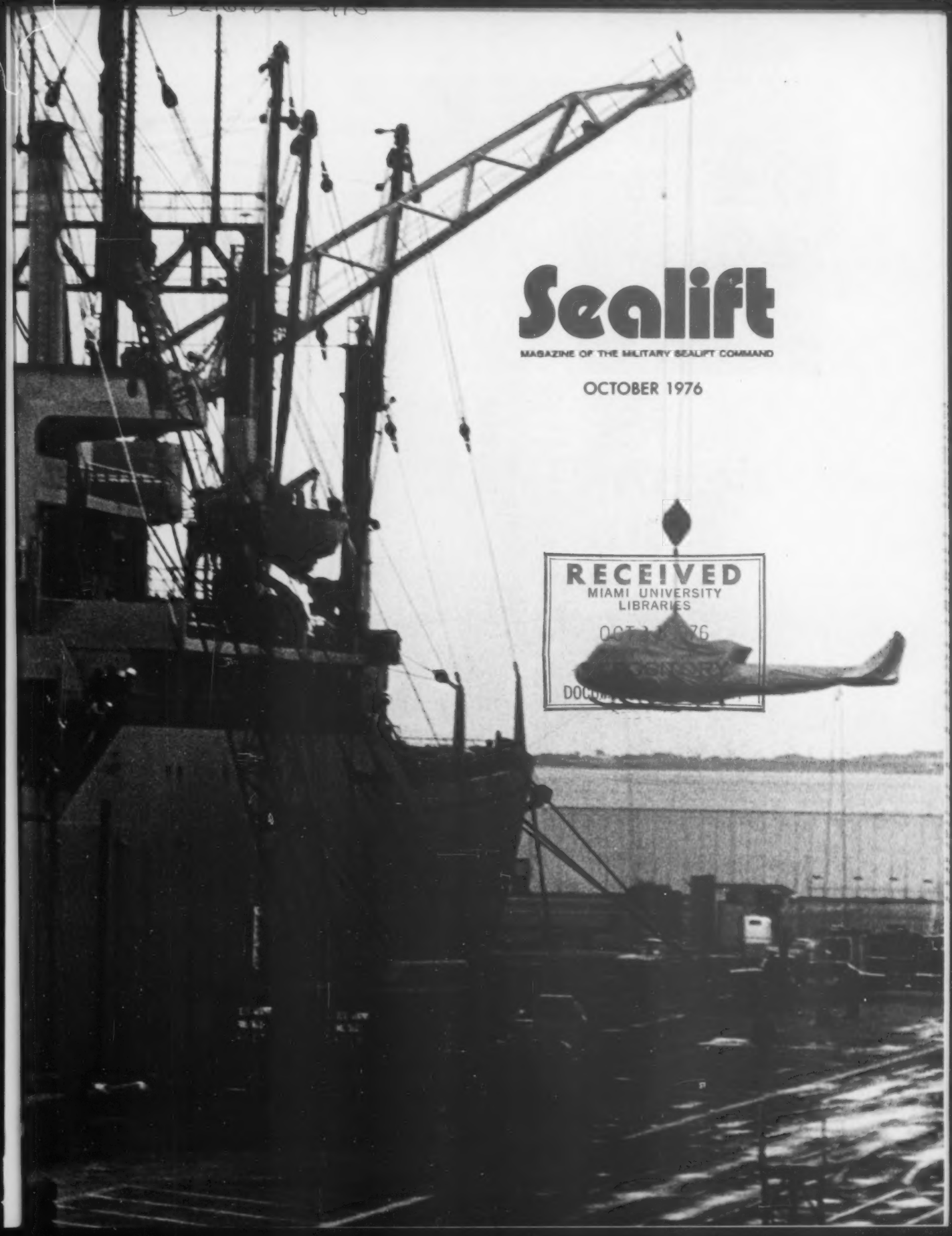

Sealift

MAGAZINE OF THE MILITARY SEALIFT COMMAND

OCTOBER 1976

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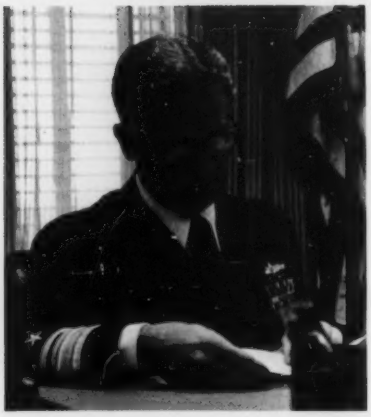


MSC Begins 28th Year

This month—October 1976—Military Sealift Command is observing its 27th anniversary. Twenty-seven years is not a long time when we are reminded that the nation we serve is celebrating its 200th birthday. But, just as tremendous accomplishments are part of U.S. history, MSC and its members have compiled a record of accomplishments that justifies the reputation the command now enjoys.

Beginning with our support of the Berlin Airlift, our role in subsequent crises in Lebanon and the Congo, and MSC maintenance of logistical lifelines during wars in Korea and South Vietnam, MSC has been an "involved" organization. In the parlance of our generation, we are always "where the action is."

Space does not permit recounting 27 years of individual and group achievement. Typical, however, is MSC's role in Reforger '76—the deployment of the 101st Airborne Division to Europe to take part in an annual NATO exercise. In August, four MSC controlled ships moved nearly 76,000 measurement tons of division equipment from Norfolk to ports in Belgium and the Netherlands—vehicles, helicopters and containerized cargo. The lead story in this issue reports on that accomplishment.

Typical, too, is the record already compiled by USNS Rigel, the first MSC fleet support stores ship. She began operations in February 1976 and already is a bulwark of the Atlantic Fleet, with a reputation attested to by numerous congratulatory messages from fleet units.

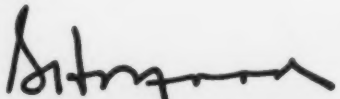
During 1976, the Secretary of the Navy lauded MSC people for their "professionalism and dedication" in Deep Freeze operations, and USNS Bowditch received a Jones Devlin award for 765 days of accident free operations. USNS Hayes won a rescue award for a nighttime search and rescue operation that saved the lives of 13 of the 14 crewmen who had evacuated their sinking ship. USNS Waccamaw also illustrated MSC professionalism when her crew pumped more than 10 million gallons of needed fuel to Navy fleet ships in a three-month period.

Among individuals who have been credited with extraordinary performance in the past year are 3rd Officer Thomas Ruane and 1st Officer William Youngblood of USNS Silas Bent. They rescued a drowning Japanese teenager and assured his survival by prompt and skilled emergency medical attention, an act lauded by many Japanese officials.

Outstanding marine employees of the year are the six MSC Atlantic members of the USNS Greenville Victory crew who helped recover the SS Mayaguez from Cambodian hands and Mr. Clarence Sosvielle of MSC Pacific. He served with distinction on board USNS Bland.

Those are only a few of a long list of outstanding accomplishments. Overall, 1976, like the 26 preceding it, was a very good year for MSC. Some ships were retired. Missions were changed, as was the command organization, and renewed attention was focused on peacetime planning, sizing of the controlled fleet, and maintenance of a responsive contingency sealift force.

That dynamism is typical of the command for we must remain a ready force which can provide the strategic mobility U.S. Armed forces require. There is neither time nor inclination within MSC to rest on past laurels. The future is today's challenge—and today's challenge is tomorrow's routine, including the normal tasks we will continue to perform and the unique requirements we must be able to fulfill.



Commander, Military Sealift Command

COVER: One of 348 helicopters delivered by MSC for Reforger 76 is unloaded from USNS Meteor with the aid of a floating crane. Story on page 4.

Sealift

MAGAZINE OF THE MILITARY SEALIFT COMMAND

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Four MSC controlled ships deliver equipment for NATO exercises in Europe.

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Army helicopters lined the dock at Norfolk as Callaghan was loaded for departure.

Reforger '76

MSC Supports NATO Exercise

By Louis R. Granger

Mother Nature's daughter, Hurricane Belle, staggered Exercise Reforger 76 in August as 40-knot winds caused the evacuation of Norfolk Naval Supply Center and a halt in loading Military Sealift Command ships.

But it was a short delay and as Long Islanders began a massive clean-up after Belle swept through, down in Norfolk Reforger loading went smoothly. Four MSC controlled vessels, the roll-on, roll-off ships Adm. William M. Callaghan, USNS Comet and USNS Meteor, and the breakbulk ship American Ranger sealifted 348 helicopters; 2,060 vehicles, and 259 containers to Europe for a massive NATO exercise.

The equipment was that of the 101st Airborne Division (Air Assault) for use by more than 12,000 U.S. Army troops who were airlifted from the United States to Germany for the exercise.

After unloading at Vlissingen, Netherlands, and Ghent, Belgium, the MSC ships were returned to their normal duties carrying Defense Department cargo worldwide. All four ships, however, sailed to Bremerhaven earlier this month (October) to return the division equipment to the United States.

Division soldiers flew to and from airfields at Rhine-Main and Ramstein air bases, Germany, with some arriving troops landing at Ostend and Koksijde, Belgium, and Schiphol, Netherlands.

Use of the seaports and airfields in Belgium and the Netherlands was a new initiative involving Reforger personnel and equipment by exercising logistical routes for supplying troops and equipment to Europe. It was the first time in 12 years that MSC has been involved in a deployment exercise.

In the past, Reforger, an acronym for the Redeployment of Forces to Germany, involved the airlifting of troops who used military equipment already prepositioned in Germany. This year, however, Army combat equipment was sealifted to Europe, with Military Traffic Management Command (MTMC) arranging, coordinating and monitoring the surface movement of division gear from Fort Campbell, Ky. to Norfolk and the receipt, staging and loading of Army helicopters, vehicles and containers aboard MSC vessels.

Use of the areas outside Germany provided allied military officials opportunities to test and evaluate host nation troops and equipment support concepts.

As Hurricane Belle was closing the Norfolk naval base on August 9, Maj. Gen. Henry Del Mar, MTMC commander, was briefing Navy officials including MSC Commander Rear Adm. Sam H. Moore; MSC, Atlantic Commander Rear Adm. Frank B. Guest, and MSC Office at Hampton Roads Commanding Officer Capt. Henry Lyon.

"We can't go from here to there with airlift alone," he said. "We must have a joint air-sealift. This is the way we want to go."

General Del Mar quoted a 1975 MTMC study which showed that a combined airlift-sealift deployment was time competitive with an all air movement and at one-fourth the cost. In addition, he said, there would be "an incredible" savings of 43 million gallons of fuel.

The study showed it would take 220 man-hours to disassemble an Army Ch–47 (Chinook) helicopter for airlift and 456 man-hours to put it together again once it arrived in Europe by air.

By contrast, a six-man team could prepare a Chinook for sealift in three hours merely by removing the rotor blades and using minimum preservation materials. After an 8 to 10-day ocean voyage, a similar team could make a helicopter operational in four hours.

In his briefing, Admiral Moore noted that the $18 million overall cost to move the Army equipment by sea to Europe was one fourth the $72 million it would have cost to move the same gear by air. Of the $18 million, $4.1 million was budg-

Army specialists ready a helicopter for loading aboard ship. Assembly and disassembly time for sealifted helos is much less than for those moved by air.

An Army vehicle is driven up the ramp of a roll-on, roll-off ship. Three ships of this type transported more than 2,000 division vehicles and 350 helicopters.

Containers are lifted aboard SS American Ranger by a shoreside crane.

eted for the actual sealift—which is expected to cost about $3.7 million.

He explained that by using the four ships between August 23 when they finished unloading in Europe and the October redeployment, from $300,000 to $400,000 may be saved. Of the $4.1 million, $1.5 million was for stevedoring services to load and unload the ships.

Meanwhile, as Hurricane Belle was forming in the Caribbean, the MSC Norfolk office went on a 24-hour watch August 2 and continued through August 11. Hurricane plotting began August 5 when it was off Miami and heading north.

On Sunday, August 5, longshoremen agreed to continue to load the Callaghan through the night in case Belle caused a delay. She did, the next day, when all operations stopped. The possibility of moving the ships to hurricane anchorages threatened as the storm pounded the Virginia Capes and MSC ships were ready to sail in one hour's notice.

To augment the relatively small MSC staff at Norfolk, nine additional persons were sent from other MSC offices. They were: Cargo Specialists Albert B. Rogers of Southport, N.C.; Joseph Ferguson, Fleet Support, MSC, Atlantic; William Muuse, also of MSC, Atlantic; and John Butz, first officer of the USNS Rigel who was on active Navy duty as a lieutenant commander. Also, Gaetano Minutillo, port engineer for MSC, Atlantic; Cmdr. Robert Riley, cargo division, MSC, Atlantic; Ens. Sharon S. Giaccio, communications, MSC, Atlantic; Cmdr. Ted Nixon, fleet support, MSC headquarters, and QM1 Edward J. Praire, MSC, Atlantic.

Norfolk office personnel involved in Reforger included: Captain Lyon; Cmdr. William B. Fields, executive officer; J. Edward Hahn, executive director; Pebble O. Piland, operations officer, Kenneth A. Aunchman, supply officer; Aubrey T. Evans, assistant supply officer; Howard L. Mowry, general supply specialist; Ernest S. Dailey, cargo loading specialist; Mrs. Mary L. DeShurley, commanding officer's secretary, and Mrs. Doris S. Myers, marine transportation clerk. ⚓

1949-1976

Another Year Begins

MSC is 27, going on 28!

But, unlike people who must cope with the inevitable ravages of age until science discovers what Ponce de Leon was never able to find, the Fountain of Youth, Military Sealift Command is not growing old. There is little chance of the command being "retired" from the Navy's organizational charts.

Military organizations do not age primarily because their most important element—skilled and dedicated people—is a renewable asset. Old faces vanish but new ones take their place and operations seem to go on as before.

Old MSC hands know that is not literally true. Great changes have taken place in MSC, although one could easily accept the philosophy of Alphonse Karr who wrote in 1849 that "the more things change, the more they remain the same."

They seem to. For example:

When organized in 1949, the command was known as the Military Sea Transportation Service. The name changed to Military Sealift Command in 1970, but primary missions continued to be movement of military cargo in peace and war and planning for emergency expansion.

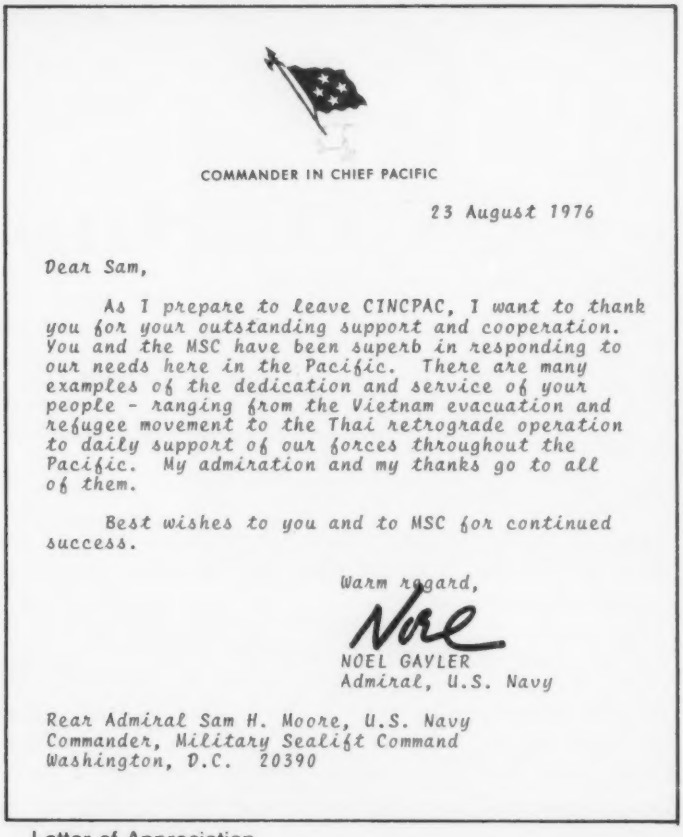
When the fledgling Navy sea transportation organization began operations in October 1949, it had 92 ships—transferred from the Naval Transportation Service. In 1975 and 1976 ships formerly manned by Navy crews were still being transferred to MSC—for Civil Service manning and direct support of the Navy fleet, a stores ship, oilers, and ocean-going tugs.

In 1950, command controlled ships evacuated 105,000 soldiers, 91,000 civilians, 17,500 vehicles and 350,000 tons of supplies from Hungnam, Korea. Twenty-five years later command ships evacuated 179,000 refugees from South Vietnam and in early 1976 some 163,000 tons of cargo was lifted from Thailand as U.S. forces were withdrawn from that country. Even as this article was being written, the crew of USNS Hudson were taking aboard another 47 Vietnamese who had fled their country in a 50-foot boat.

In April 1953, the crew of a command troopship rescued 48 crewmen from the disabled SS Cornhusker Mariner near Pusan Harbor in Korea. In 1975, crewmen of the USNS Hayes found 13 survivors of a sunken Liberian flag vessel, and in June 1976 crewmen of the USNS Sealift China Sea picked up 31 survivors of a sinking Panamanian vessel. Over the years, thousands of their contemporaries have owed their lives to prompt and professional actions by the men who sail the MSC fleet.

In 1964, MSC ships and crews lifted U.S. Marines and their equip-

More than 16,600 refugees were carried aboard U.S. Line's Pioneer Contender during the evacuation of South Vietnamese in 1975. Fourteen Challenger class breakbulk cargo ships are chartered by Military Sealift Command.



COMMANDER IN CHIEF PACIFIC

23 August 1976

Dear Sam,

As I prepare to leave CINCPAC, I want to thank you for your outstanding support and cooperation. You and the MSC have been superb in responding to our needs here in the Pacific. There are many examples of the dedication and service of your people - ranging from the Vietnam evacuation and refugee movement to the Thai retrograde operation to daily support of our forces throughout the Pacific. My admiration and my thanks go to all of them.

Best wishes to you and to MSC for continued success.

Warm regard,

Noel

NOEL GAYLER
Admiral, U.S. Navy

Rear Admiral Sam H. Moore, U.S. Navy
Commander, Military Sealift Command
Washington, D.C. 20390

Letter of Appreciation

ment to the Mediterranean area as part of Exercise Steel Pike. Last month, helicopters, vehicles and containerized equipment of the Army's 101st Airborne Division were transported to Europe—as part of Reforger '76, an annual NATO exercise.

While past events seem to repeat themselves, change occurs in MSC as it does in any organization. But, all change generally is more a matter of form than substance—as witness two quotes. Diogenes, in 540 B.C., warned that "All is flux, nothing stays still." Sixteen centuries later the Marquis DeRacan expressed the same idea in different form. "Nothing in the world lasts save eternal change." MSC has changed, and will continue to change as it has for 27 years.

The name of the game still is sealift, but the ships used and missions assigned have changed. New tools are employed in communications, in data processing, in most other functions, by new people, but the basic responsibility remains manning and operation of ships.

At one time, MSC operated more than 60 troopships. Today it has none. That change is a result of jet aircraft that fly people faster and cheaper than a ship can move them. Aircraft also have made the commercial passenger liner obsolete. Only cruise ships remain active.

And yet, in the early days of the war in South Vietnam, MSC troopships—the three still in operation at that time—delivered a half million troops. It is conceivable in a future war that laid up passenger ships and troopships might have to be pressed into service. It is certain that cargo ships will be needed to support troops no matter how they are deployed.

That means MSC which has a responsibility to develop contingency plans and assets in peacetime must be actively involved in learning how to best use the commercial ships that will be available in an emergency.

Commercial container ships were used during South Vietnam hostilities. So were a few roll-on, roll-off vessels, those which MSC operates. But barge ships such as the LASH and Seabee were not used extensively in support of military forces in South Vietnam.

New and modern commercial ships are generally big, fast, highly productive and specialized. Because of their cost and the great investment required in support systems, their owners strive for full utilization and fast turnaround time. Because of their fewer numbers, compensated for by their productivity, they operate as part of integrated intermodal shipping systems. Withdrawal of even a small number of commercial ships in a military emergency would have an impact on economic operations.

Given those factors, it is understandable why commercial maritime organizations and MSC continue to work together to improve their joint capability—to meet the requirements set forth in the Merchant Marine Act of 1936 which says that the merchant marine shall be ready to augment Navy assets in an emergency.

A recent example of high-level cooperation was a June 1976 forum on sealift readiness and military exercises. Hosted by MSC, it was attended by more than 125 maritime leaders plus transportation specialists from all of the military services. Thrust of the day-long forum was how each could help the other fulfill national security responsibilities.

Reforger '76—the August move of 101st Airborne Division equipment to Europe by the USNS Meteor, USNS Comet, American Ranger and Admiral William Callaghan—helped MSC exercise its contingency capabilities. Many valuable lessons already have been derived from Reforger '76, not the least of which is strengthened working relationships between the Army's Military Traffic Management Command which controlled the flow of cargo to Norfolk and the loading of the four MSC controlled ships.

The teamwork of the commercial-military sealift team is highlighted by the fact that 95 per cent of all military sea cargo moved on privately-owned commercial ships in the past fiscal year. In the next fiscal year, that figure will rise to 97 per cent.

Typical too is contract operation of MSC tankers—18 of 21 now being operated by private contractors. Included are the nine Sealift class tankers which are privately owned but on long-term charter to the command. Also on long-term charter are four Columbia class tankers. Both types were secured by the command by means of build and charter arrangements under which private investors built ships to meet command needs on the strength of commitments to charter the vessels. Over the past 27 years, nearly 30 ships have been procured by some form of build and charter, additional evidence of the long-term and close relationship between the maritime industry and the Navy's sealift operating agency.

Much has been written about MSC's enlarging fleet support role—a responsibility now fulfilled by 16 Civil Service manned ships. It has grown in recent years, but it is not an entirely new mission. Over the years MSC tankers frequently have replenished fleet ships on an opportune basis. Now, however, fleet support is a full-time, around-the-clock mission with MSC assets dedicated to providing Navy fleet ships

Shown in a Korean port in the 1950s is the MSC baby aircraft carrier USNS Point Cruz.

MSC cargo ships and Navy and Coast Guard icebreakers tied up at DeLong pier in Thule, Greenland.

the service they require.

Congratulatory messages for both fleet support and special project operations have become almost a routine in MSC, routine only because the performance, dedication, skill and courage which they recognize are continuing.

Twenty-seven years of MSC history abounds with examples of what for lack of a more dynamic word is often called "professionalism." Like the pro footballers who operate in the obscurity of the line clearing a path for more glamorous ball carriers, achievements of MSC's pros are seldom publicly recognized.

They do get the credit where it really counts though, from the people they support, the Army, Navy, Marine Corps and Air Force, from the Oceanographer of the Navy, the Naval Research Lab, the Air Force Missile Test Centers, from NASA, those whose ships flounder or sink at sea, from refugees seeking a sanctuary, and from their fellow command members.

Thus, as MSC members take part in anniversary observances, and perhaps spend a few minutes recalling past memories, they can be certain that "change" will continue in future years as it has throughout the past 27. Without the challenges that changes bring, our individual futures would be less interesting, our organizational life less certain. Happy Anniversary! ⚓

MSC-industry teamwork is illustrated by consolidations such as this between USNS Taluga and an MSC chartered tanker.

Nerve center of MSC tanker operations is this control board in the headquarters tanker division. Worldwide locations of some 32 tankers are maintained by (l to r) Mary Pottle, Paulette Imler and Lt.(j.g.) Charles Bodenheimer. At one time, MSC controlled more than 100 tankers, totaling 2.5 million deadweight tons.

Transportation Role Enlarging

By Hugh C. Downer

Many years ago Robertson, an English philosopher, said, "Commerce tends to wear at those prejudices which maintain destruction and animosity between nations." Certainly this statement remains completely valid though made years before the advent of the industrial age with resultant requirements for tremendous quantities of bulk raw materials.

Fortunately or unfortunately, depending on which side of the fence you may be, our creator put most raw materials in highly inaccessible locations, remote from the desirable places of this world where great cities and industries have been developed. The end result has been the necessity to develop a large and efficient worldwide system of maritime bulk transportation.

History has taught us that development from one phase into a more sophisticated one necessitates the passage through many psychological and other type barriers. The fact that human nature normally resists

"Our creator put most raw materials in highly inaccessible locations."

changes in established patterns means that each new phase in a development can be enacted only within an enlarged territory, comprising less familiar people and methods, with resulting retardation of progress.

A typical example can be traced to the Greek philosopher Plato, who recognized that all things are produced more plentifully and easily, and of better quality, when one man does one thing which is natural to him, and does it at the right time. The doctrine of specialization, or the fundamental of that doctrine, was certainly known to Plato and was projected towards a society of very limited size, although he completely understood the strains inherent to a changing society. We in this country still believe in the doctrine of specialization. However, we are progressing toward ever more complicated forms of society which we hope will be of even higher order, giving increasing satisfaction to their members.

We are well aware that continuing development depends on progress made in one important area—transportation. The slow evolution of transportation is probably a major reason for the rather immature forms of administration that we encounter in a society that now covers the entire world rather than being the ideal community envisioned by Plato. The transportation evolution has, however, gathered greatly increased

"We are well aware that continuing development depends on progress made in one important area—transportation."

momentum in the past few years. It is now fair to state that we should replace the word "evolution" with the word "revolution."

Our world is smaller, consequently its future is more and more dependent on the progress of the transportation systems.

More than 20 years ago iron ore was being shipped from Peru to Japan in Liberty ships of approximately 10,000 deadweight tons at a cost of approximately $16 a ton. Interestingly enough, making allowances for the changes in the commercial index, the clipper ship of the 1800s was as efficient as the Liberty ships operating in the 1950s. Obviously, high transportation costs developed in that type of ship resulted in high delivery costs for relatively low dollar value commodities. Through the application of systems concepts to the maritime bulk transportation of raw materials, transport costs have been greatly reduced. Despite the extreme inflation of the last few years, iron ore now can be transported from Peru to Japan for approximately $5 a ton.

Recognizing that the present sorry state of the marine industry must be regarded as temporary, even though we anticipate the condition will continue through the balance of the 70s, we can expect increasing demand for more efficient systems of marine bulk transportation. Since the early 1950s there has been a revolution in ocean transportation. During the 1950s and 60s, when truck and rail transportation costs increased by approximately three to four per cent per year, the cost

per ton mile for ocean transportation fell in real terms to as much as one third of the cost of the early 50s. This resulted from a combination of factors including but not limited to increased ship size, improved hull design, more efficient propulsion machinery, and adoption of automation technologies which have decreased crew size.

In the early 1970s I would have indicated that a continuation of this downward cost trend in ocean transportation could not be anticipated. The present recession has, however, resulted in a temporary if somewhat artifical downturn. Commencing in 1970, construction, labor, fuel and insurance costs began to escalate. These increases can be only partially offset in the future by expanding vessel size and improved operating efficiency and accelerating change tends to extend the period of time between a decision to proceed with an investment and commencement of the operation. Thus it is essential to look ahead with imagination and to anticipate innovations which can influence economic viability of a project. Prudent thinking would indicate that future planning be based on certain key assumptions:

* Inflation will continue; thus forms of transportation in which costs of labor, maintenance, and frequent equipment replacement represent a high percentage of the total cost, should be minimized.

* Minerals will be sought wherever most economically available throughout the world and will be processed where this can be accomplished most efficiently, transporting the product by optimum method to the most profitable market. This will encourage adoption of a total transport system with a single enterprise assuming responsibility for the entire mine-to-market process.

* Environmental pollution control will be increasingly important. The export of pollution from the developed to the developing nations will be an increasingly popular concept although we must question how long the developing nations will continue to encourage this policy.

Every enterprise is influenced in different ways and in varying degrees by transportation development. Based on the assumptions discussed above, the following general marine transport developments can be anticipated for the years ahead.

Vessel design, size and type will be affected. Ocean-going vessels will continue to increase in size although this trend will be restricted by the rising cost of port developments, docks and conventional discharge facilities. New techniques for cargo handling from offshore moorings can be employed to circumvent these limitations. Such techniques will include both pneumatic and liquid transport systems utilizing piping both above and below surface. Other mechanical systems have been and are being developed to reduce the labor components and to divorce the vessel from physical limitations of the port.

Employment of the largest vessels and the more sophisticated type of cargo handling equipment, because of the high costs involved, will be primarily in high volume bulk movements of single commodities. There will be continuing refinement in the development of what we like to call the Panamax, or handy size oil-bulk-ore type vessel, with fewer restrictions imposed on such sized vessels with regard to ports at which they can call.

Vessels will continue to increase in efficiency through improvement in design and operation of main propulsion units and control systems. There will undoubtedly

In 1972 the 1,000-foot-long ore ship Stewart J. Cort was the largest vessel on the Great Lakes.

be increasing use of a more or less conventional type of self-discharging vessel in relatively short haul ocean transportation. The economical justification for any large self-discharging vessel, where additional new construction costs with a conventional belt self-discharging system can approximate $5 to $7 million, and the corresponding additional costs for a slurry type system can approximate $10 to $12 million, can be developed only where ships are employed in short voyages, discharging at multiple berths. The loaded leg of a voyage employing a self-discharging type vessel probably should not exceed four days.

"Vessels will continue to increase in efficiency through improvement in design and operation of main propulsion units and control systems."

Integrated tug-barge (ITB) systems are a relatively recent development. Such systems have been built up to 35,000 deadweight tons and designs have been approved up to 100,000 deadweight. The basic philosophy behind the development of ITBs revolves around a thrust in two directions. An unmanned barge-tug combination would probably cost less than a comparable self-propelled vessel, and manning costs would be lower. The ITB has, in the latter respect, served a purpose in that self-propelled vessels now are operated with Coast Guard approved manning substantially less than that previously required. However, the cost of the combined units now equals or exceeds that of a self-propelled vessel of the same carrying capacity.

Still another system of tug-barge operation revolves around what is known as the automatic barge control. An unmanned towed barge with patented steering devices can be towed behind a tug at sea with an

"Conventional dry bulk ships are generally limited in maximum size by the capabilities of the shore receiving facilities."

almost complete absence of yawing, resulting in greatly increased towing efficiency. Designs for this type have been developed in the 40,000-deadweight-ton range.

Cargo forms also will change in future years. It can be safely said that there are few normally dry bulk commodities which, if required to be moved in heavy volume, can not be moved in ships of entirely new types with cargo in entirely different forms than we normally think of—at lower cost. Movement of iron ore in slurry form from South America to Nippon Steel in Japan and to Oregon Steel in Portland is one example of such a development.

We can also expect substantial changes in cargo handling facilities. To realize the economies inherent in increasing vessel size it was necessary to concurrently develop supporting shore facilities. It also was necessary to prove to the ultimate receiver of the commodity involved that it was worth his while to develop parallel receiving facilities.

Significant progress has been achieved in loading and discharging capabilities over the past 25 years. Loading rates of 8,000 to 10,000 tons per hour are common at the higher volume bulk shipping ports. Unloading rates of 20,000 to 25,000 tons per day are not uncommon with shore based discharging facilities. Self-discharging vessels are able to achieve unloading rates of 4,000 to 6,000 tons per hour providing the shore receiving and take-away facilities are geared to such volume.

Conventional dry bulk ships are generally limited in maximum size by the capabilities of the shore receiving facilities. Size is also sometimes limited by structural requirements. The continuing increase in the size of dry bulk carriers with discharge of upwards of 200,000 tons at a single receiving port has necessitated a concurrent increase in the rate of receiving such cargoes to the point where a discharge rate of 45,000 tons per day is required. This demands not only tremendous berths

"It is essentially true that bigger and better ships are the answer to more efficient bulk ocean transportation."

and deep drafts, but also expanded gantries and exceptionally large clam buckets for digging the cargo from the holds.

It is essentially true that bigger and better ships are the answer to more efficient bulk ocean transportation. However, there are cautionary qualifications. Gains anticipated by going to larger and larger ships can be partially nullified by various factors.

Studies have indicated that unless we utilize a completely different system (such as slurry pumped ashore through a submarine pipeline), it will be extremely difficult to develop large economical self-discharging vessels handling conventional dry bulk commodities at the high discharge rates required to insure rapid dispatch of vessels that cost upwards of $20,000 a day when in berth. It is therefore probable

"The transportation evolution has gathered greatly increased momentum in the past few years."

that conventional dry bulk, self-dischargers will be limited to smaller deadweights.

Commodities to be received by ports where restrictions are imposed by channel draft, among other things,

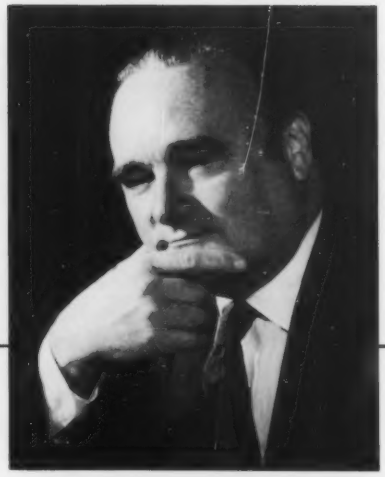
"Our world is smaller, consequently its future is more and more dependent on the progress of the transportation systems."

will be limited to materials moving in relatively low volumes in what now are classified as small ships, both conventional bulkers requiring shore facilities for discharge and self-discharging type vessels.

The past 25 years, and the last 10 years in particular, have witnessed terrific developments in the field of marine bulk transportation. Although there is presently

"The past 25 years, and the last 10 years in particular, have witnessed terrific developments in the field of marine bulk transportation."

a temporary hiatus as a result of the depressed world economy, there is no question that once recovery is complete there will be another tremendous expansion of requirements for transportation of raw materials worldwide. The challenge of the late 70s and 80s is tremendous. That challenge is to match marine bulk transportation systems, both ship and shore, through the use of imaginative technology, to the demands that will be placed on these systems as new sources of raw materials continue to be developed in areas remote from their final market. ⚓



Hugh C. Downer is chairman, chief executive officer and major stockholder in Maxon Marine Industries, Inc., an intermediate-sized commercial shipyard located at Tell City, Ind.

A 1939 graduate of the University of Michigan, he has a bachelor of science degree in naval architecture and marine engineering. He has held numerous positions in the maritime industry. Among them are senior vice president of marketing and marine operations, Marcona Corp.; president, chief executive officer and director, The Ohio River Co.; executive vice president and general manager, Wilson Marine Transit; president and sole owner of H. C. Downer and Associates, a naval architecture and marine engineering and transportation consulting firm he organized in 1951, and vessel superintendent and assistant fleet manager of Interlake Steamship Co.

He has authored more than a dozen publications appearing in such periodicals as the American Society of Naval Engineers Journal and has prepared studies for the U.S. Department of Commerce and State of California Navigation and Ocean Development Commission.

Most of the cargo vessels used in the lift were commercial ships under MSC charter.

Thailand Lift Completed

More than 20 ship loads of Defense Department cargo, ranging from household goods to weapons, were withdrawn from Thailand during the withdrawal of U.S. troops from that country.

Altogether, 163,600 measurement tons (40 cubic feet to a ton) were sealifted out of Bangkok and Sattahip ports in 22 voyages by U.S. government owned and Military Sealift Command chartered ships between March 20 and July 20.

The MSC office at Sattahip on the Gulf of Thailand was closed in July marking the first time since the late 1960s that no command representative was stationed in Thailand.

As the retrograde cargo was being lifted out of the two ports and the July deadline to have it moved got closer, two ships, the American Reliance and Pioneer Contender, were sent from the U.S. West Coast in ballast to speed up operations. The Reliance crew picked up military containers at Midway Island and delivered them to Okinawa before continuing to Thailand.

At one point it looked like a major delay was in the offing when a stevedore strike was called on April 2. Stevedores walked off the job while loading the roll-on, roll-off ship USNS Meteor. However, the strike was settled in about three hours and loading continued.

Most of the cargo vessels employed in the lift were commercial ships under charter to MSC, including ships owned by American President Lines, Central Gulf Lines, Hudson Waterways, Lykes Brothers, Sea-Land Services, States Steamship, and U.S. Lines.

The bulk of the retrograde cargo consisted of vehicles and ammunition which originally had been des-

The bulk of the retrograde cargo consisted of vehicles and ammunition.

Stevedores ready a cargo hook for lift of another vehicle to the deck of an MSC controlled cargo ship.

tined for South Vietnam and Cambodia. Although much of the equipment was returned to various U.S. ports, some was moved to Korea, Japan, Indonesia, the Philippines and Guam for use by U.S. forces in those areas.

MSC Commander Rear Adm. Sam H. Moore said the "magnitude of the task and the short time frame allotted for its accomplishment emphasized the significance of this undertaking."

In a message to MSC, Far East Commander Capt. Gerald W. Dyer, Admiral Moore said, "Your achievement in controlling this retrograde movement is noted with pleasure. Only superior management and close coordination could have produced such results. Extend my congratulations to all organizations and personnel concerned."

In another message to persons involved in the planning and execution of the withdrawal, Adm. Maurice F. Weisner, commander-in-chief, Pacific, said their "outstanding performance in this emotionally and politically charged operation, despite the myriad procedural and transportation problems encountered, was superb.

"The real professionalism and tireless dedication to duty of all hands averted disruption of our traditionally good relations with Thailand and were a credit to all." ⚓

Silhouetted between sky and sea, Liberty ships wait to unload their cargo in a World War II invasion scene.

The Many Lives of John R. Park

By Louis Panarale

The worst seemed to be over for the SS John R. Park. For nine months the ship had carried troops, trucks, ammunition and food across the English Channel from England to France. In 33 round trips it had survived the dangers of bombs, torpedoes and mines. John R. Park earned its stripes in the most massive seaborne assault the world has ever seen—the Allied invasion of France during World War II, better known in military circles as the Normandy landings.

John R. Park was a typical Liberty ship, nothing special to look at, kind of homely in fact. It was one of the hundreds of Liberties involved in the D-Day invasion on June 6, 1944 and in the supply shuttle that followed for months afterward. The total invasion fleet involved thousands of Allied naval vessels, merchant ships and landing craft that moved out of ports all along the English coast.

John R. Park worked out of the port of Southhampton, England. In a way, its story is the story of all the Liberties that shuttled the channel. It just did its job of delivering the goods and sailed in that vast Allied armada pretty much unnoticed.

The chief advantage of Liberty ships was the simplicity of their

Otto Bortfeld recalls that when he was assigned to the Liberty ship John R. Park, "the ink wasn't even dry on my master's papers."

maintenance and operation. And there were so many of them. During the three years from the time the first Liberty was built in September 1941, U.S. ship yards turned out 2,742 Liberties. Built on assembly line systems, 140 of these homely cargo carriers could be turned out in one month by 18 ship yards. The standard Liberty had five holds and could carry 10,920 deadweight tons. It travelled at about 11 knots when fully loaded.

John R. Park did not survive the war. On March 21, 1945, seven weeks before Germany surrendered, the ship was torpedoed and sunk off the coast of Falmouth, Wales but without any casualties. The crew of 38 merchant seamen and 20 Navy men had time to board six lifeboats which were later towed to shore by British patrol boats. The ship, carrying no cargo, had been heading to its homeport in Brooklyn where it was to be decommissioned.

"It's kind of ironic," said Otto Bortfeld, the former master of John R. Park. "For months we braved the dangers of mines, U-boats and planes in crossing the channel. Then we get hit coming home empty."

Bortfeld now is first officer of USNS Wilkes, an oceanographic survey ship operated by Military Sealift Command. A 62-year-old civilian mariner from San Francisco, he has been with MSC since 1968. Besides the Wilkes, Bortfeld has served as first officer on two other MSC ships, USNS Twin Falls and USNS Sergeant Keathley.

Bortfeld feels American civilian seamen were unsung heroes of the Normandy landings. He recalled that John R. Park, like most merchant ships, was manned by seamen fresh out of U.S. maritime training schools. Somehow, quickly assembled crews usually managed to get their ships under way, deliver the cargo and head for home.

In February, 1944, John R. Park was sailed from Brooklyn by such a crew. There were some old sea hands aboard, but for the most part it was a crew of youngsters going to get their first taste of war.

Most of the Liberty ships of World War II were owned by the U.S. War Shipping Administration Board and operated by private shipping companies. John R. Park was operated by the Luckenbach Steamship Co.

"The ink wasn't even dry on my master's papers when company officials told me, 'Just make this short run for us to the United Kingdom,' " Bortfeld said with a smile. "I came back a year later as a refugee from a sunken ship."

Bortfeld said that the crew on his ship had no idea of what was in store for them as they sailed out of Brooklyn on a chilly February morning. All they knew was that their destination was some secluded bay in Scotland.

While John R. Park was laid up in Scotland, officers and crewmen practiced operating the winches. They did not realize then, but the versatility they were getting from many practice drills would prove invaluable in the months ahead.

By the middle of March, the congestion of ships in southern English ports was enormous. The logis-

tics were complicated in preparing an armada of thousands of Allied naval vessels, merchant ships and landing craft. One and a half million American troops alone were assembled in Great Britain.

D-Day came on June 6, the day the Allied assault forces reached the shores of Normandy and German-occupied France. John Gorley Bunker, an author of histories on Liberty ships, said the merchant seamen were a vital factor in making the invasion a success.

"Once ashore," Bunker wrote, "troops needed mountains of ammunition, food, guns, and equipment to keep fighting. Hundreds of ships, large numbers of them Liberties, maintained a supply shuttle between England and the French Coast after the initial landings, and later to Cherbourg, Antwerp and other captured ports."

John R. Park was in the D-Day fleet, sailing out of Southampton, England. The sight of ships as far as the eye could see was an awesome one. Ernie Pyle, journalist and chronicler of World War II, made the D-Day crossing on one of the ships and described the scene.

"The best way I can describe that vast armada and the frantic urgency of the traffic is to suggest that you visualize New York Harbor on its busiest day of the year and then just enlarge that scene until it takes in all the ocean that the human eye can reach, clear around the horizon. And over the horizon, imagine dozens of times that many."

For Bortfeld and the crew of John R. Park the D-Day crossing was a harrowing experience. In the dead of night, trying to keep its position among ships with all lights blacked out, John R. Park got lost from its convoy.

"There we were, with 450 men of a combat engineer group, a Navy gun crew and the ship's crew, sitting in the middle of the English Channel where everything was pitch black," Bortfeld recalled. "If we tried to return to England without the safety of a British convoy we risked running into a British mine. To proceed toward France would invite the danger of running into a blacked-out Allied ship.

Radar was not furnished on merchant ships in those days. We had to navigate by magnetic compass. I told the Army colonel in charge of the troops that we weren't going to move until we had better visibility. He was somewhat dismayed."

As dawn started to break, Bortfeld and others thought they heard the sound of a German U-boat. "What happened next was almost like fiction," Bortfeld continued. "The sound was coming from a U.S. Navy Coast Guard boat manned by a friend of mine, a fellow named Bernard Wood from Maine. Before the war, we had served together in the Coast Guard." Wood's boat was soon joined by three more Coast Guard boats and they escorted John R. Park toward France.

On D-Day John R. Park unloaded troops and vehicles off shore into tank landing ships (LSTs) that maneuvered alongside the ship. The

A Liberty ship in New York harbor prepares to join a World War II convoy for Europe. Liberties were not much to look at but easy to operate and maintain.

timing was critical. The crews had to relay troops and vehicles from ship to shore by purposely running the LSTs aground at low tide. Then, like beached whales, an LST would ride the high tide back to sea.

But the beaching maneuver was hardly adequate to handle the deluge of men and hardware that would come pouring onto the beaches in the days that followed. Since all French ports were still in German hands, the Allies carried out their plan of putting together artificial harbors called "Mulberries." On D-Day a fleet of towboats moved the "Mulberry" components 100 miles across the English Channel.

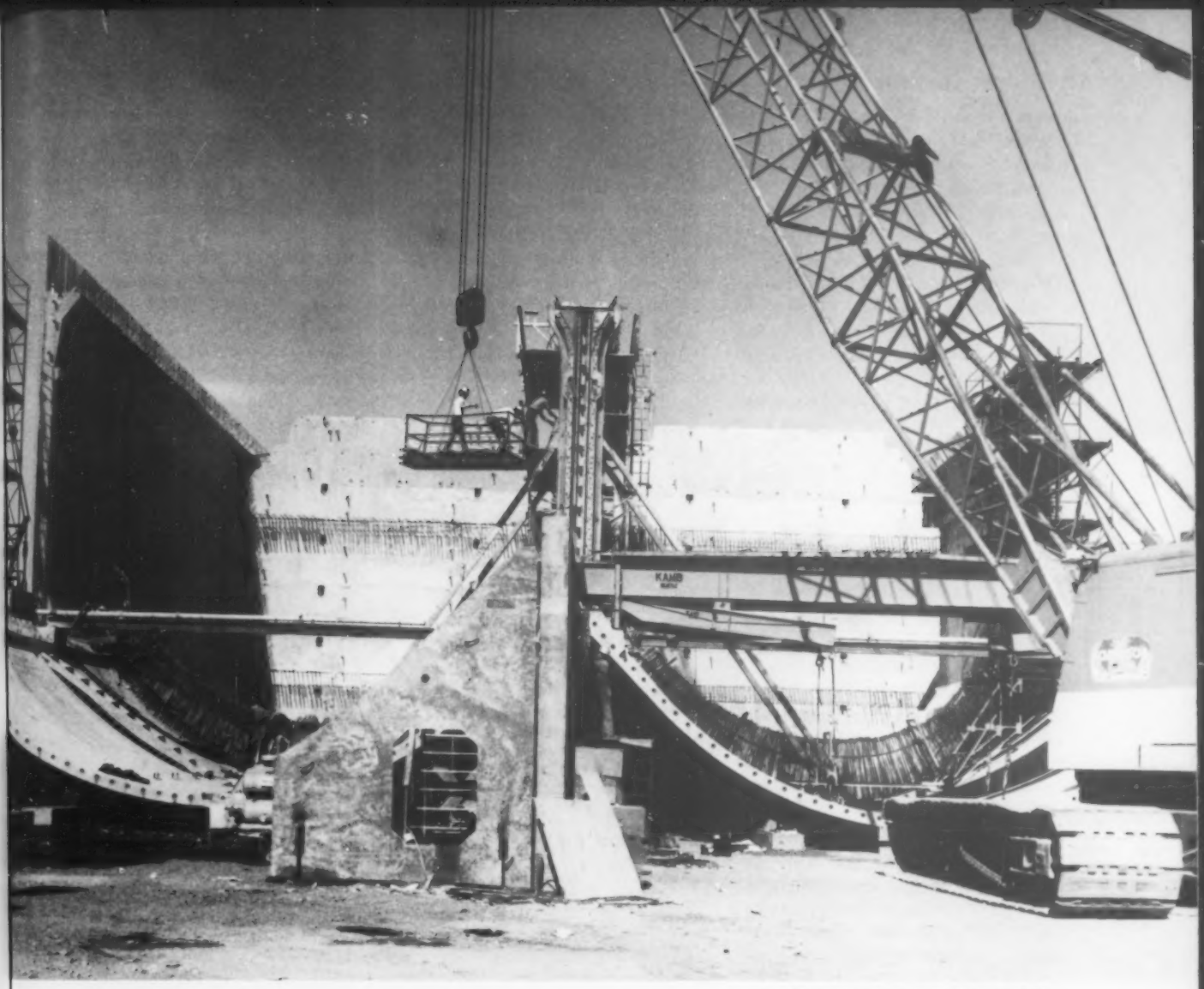
The prefabricated harbors consisted of a breakwater formed by ships purposely sunk in a row (Gooseberries), concrete caisson moorings as tall as five-story houses (Phoenixes), and floating steel structures (Bombardons) to break up wave action. The Phoenixes formed a sea wall big enough to moor seven Liberty ships and 12 smaller vessels.

Bortfeld said that John R. Park and other Liberty ships were called into extra duty after one of the worst storms in 40 years hit the Normandy coast around June 20. Many landing craft and barges were driven ashore. Worse yet, the artificial harbor at Omaha Beach began to break up. After the storm, unloading had to be stepped up to make up for lost time.

Army stevedores were supposed to unload the Liberties. But plans had gone awry because of the storm and the crews had to unload their own ships. "I was the skipper but I had to take my turn at the winches like everybody else," Bortfeld said, adding that those emergency drills in Scotland finally paid off.

Bortfeld said that MSC demands good performance from seamen on its Navy fleet support ships. The seamen are responding to those demands, he said. "Some people may be surprised they are doing so well. But not this old-timer. I recall those days at Normandy and I have learned never to underestimate the potential of a civilian seaman." ⚓

Civilian mariners manning cargo ships often came under fire as they swung at anchor off the beaches while small craft shuttled to shore.



After construction, the world's largest pre-stressed, reinforced concrete natural gas storage facility will be towed to Indonesia.

Concrete Construction: Is It a Future Trend?

By Linda M. Quinones

Interest in concrete as a maritime building material has risen and ebbed ever since J. L. Lambot constructed the first concrete vessel in 1848. A Frenchman, Lambot built a small rowboat of concrete-coated mesh at a time when wood was the primary building material. Perfecting the technique he called "Fericement," Lambot constructed several other boats, one of which is still afloat in the Amsterdam Zoo.

Since then iron, steel, aluminum and fiber glass have come into use as maritime building materials, with concrete never really getting off the ground despite its promise.

Serious effort in building large concrete ship hulls was first made during World War I when reinforced concrete was used since steel was in short supply. In reinforcing concrete, the concrete is poured and formed around steel rods and a

bond between the two is formed. When loads are applied to a reinforced concrete structure the tensile stresses are transferred from the concrete to the rods by means of the bond.

In 1917 the first American reinforced concrete vessel, the Faith, was built by W. Leslie Comyn. A self-propelled cargo vessel of 5,000 deadweight tons, Faith operated successfully along the U.S. Pacific Coast, Gulf Coast, South America and Mediterranean.

The United States embarked upon its first concrete ship building program in November 1918 when the U.S. Shipping Board contracted for 56 reinforced concrete cargo ships, totaling about 300,000 deadweight tons. Also ordered were 34 concrete barges. Not all served in World War I, but those that did performed well. They demonstrated good riding qualities and vibrated less than conventional steel-hulled ships.

Despite the good performance records of these ships, interest in concrete hulls again waned until World War II when 104 concrete ships were constructed. Landing craft and barges made of pre-stressed reinforced concrete also were put into service. Pre-stressed concrete is both stronger and lighter than reinforced concrete.

Although pre-stressed concrete vessels rendered good service, their excessive weight required great power to drive them. Building costs also were high and eventually halted construction of concrete vessels.

During the Vietnam War the Navy built ferro-cement vessels to replace the Vietnamese Navy's 31-foot patrol boats. Ferro-cement construction uses pipe or rod frames to support several layers of mesh. Together they form a skeleton of a ship's hull. Concrete is poured around the pipe and mesh frame to complete the hull.

More than 50 Coastal-Raider class cement patrol boats were built in Vietnam. Each was 65 feet long.

A. Erich Baitis of the surface ship dynamics branch of the David Taylor Ship Research and Development Center in Bethesda, Md. said there were several reasons why cement was used to construct the patrol boats.

"Labor costs there were low," he said, "only about 80 cents an hour, and unskilled labor could do most of the work. Also, at that time, there was a huge surplus of cement at DaNang and setting up the facilities for construction of the concrete boats required little expense."

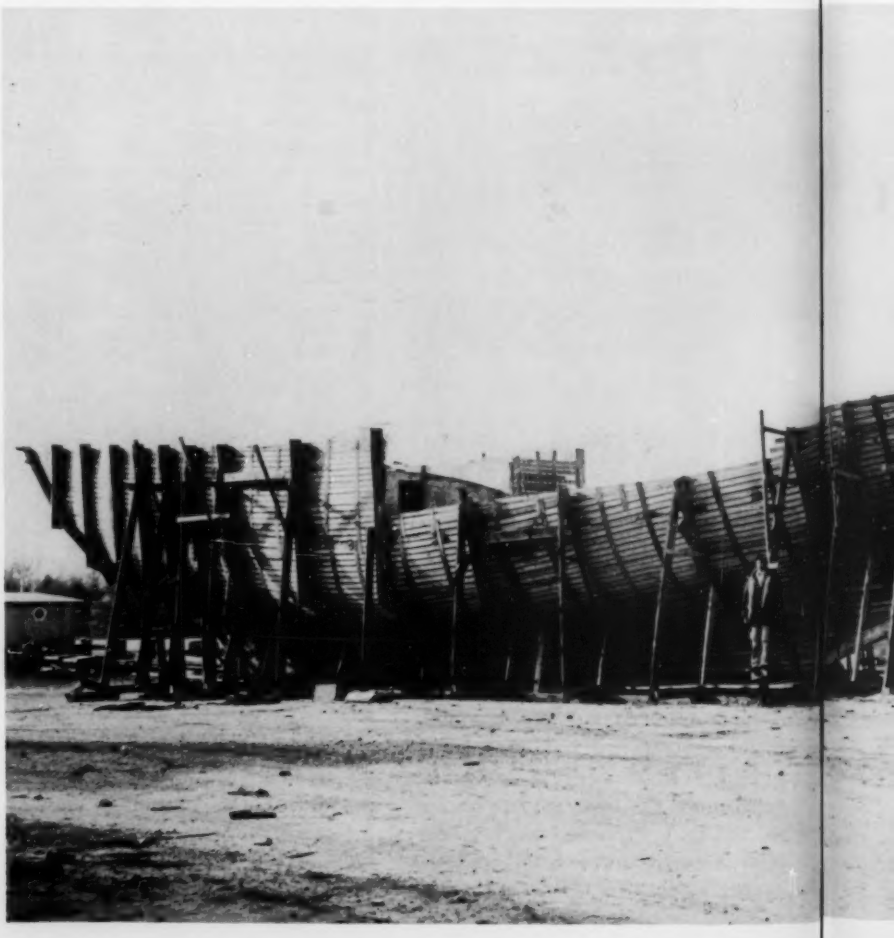
Three ferro-cement planing boats which skim the surface of the water were developed by Naval Ship Research and Development Center for construction in Korea three years ago. Frank Brauer, a materials engineer with the David Taylor Naval Ship Research and Development Center, said the light patrol boats performed satisfactorily.

Brauer said the Navy is not building any ferro-cement vessels now since "labor costs make them economically unfeasible."

However, Robert Wilde, deputy director of the American Concrete Institute in Detroit, Mich., feels there is a growing trend toward construction of ferro-cement inland waterway tugs. "The low maintenance cost of ferro-cement vessels makes them especially attractive to tug operators," Wilde said. He also reported that an increasing number of yachts and houseboats are constructed of ferro-cement.

A cement yacht recently was advertised for sale in the National Fisherman. Sporting a price tag of $75,000, a 50-foot ferro-cement ketch was described as "rugged, roomy, beautifully balanced and excellent under sail."

Wilde also pointed out that building of cement canoes has become a



popular hobby across the nation. Chapters of the American Society of Civil Engineers sponsor cement canoe races, awarding prizes for both construction and winning. "A cement canoe is simple to construct, in fact, one can be built in a backyard by one person in a single day," Wilde said.

Asked why cement had not yet become a widely used maritime building material, Wilde said, "A lot may have to do with the fact that many naval architects and shipbuilders are more comfortable working with steel. It's a material they have more experience with," he said.

One naval architect who has designed a number of concrete hull vessels is Charles W. Wittholz, a former employee of Military Sealift Command. Wittholz feels that despite certain advantages of building concrete hull vessels, there are some disadvantages as well. "One possible drawback of ferro-cement boats is their eye appeal," he said. "Unless properly constructed they can be bumpy, destroying the smooth lines which make a vessel aesthetically pleasing."

The most beautiful ferro-cement yacht ever built according to Wittholz was designed by Stephen R. Seaton of Bradenton, Fla. Sixty feet long, it was built at a cost of $360,000. "Unlike most of the small craft I have seen, it was smooth and beautifully finished," Wittholz said.

Labor cost is another disadvantage in concrete boat construction, said Wittholz. "With ferro-cement an enormous amount of labor is required to position the steel mesh. It must be properly spaced and tied or welded, whichever the case may be."

Wittholz has designed a concrete 17th century brigantine for David Kent of Port Jefferson, N.Y. Completed after four years of work, the vessel participated in Operation Sail in New York July 4.

A number of interesting concrete craft now are under construction.

Ferro-Boat Builders, Inc. of Mount Harmony, Md. has been building ferro-cement boats for the past five years. Currently the company is constructing a 90-foot dhow, a lateen-rigged boat used mostly by the Arabs. When completed in about a year, the boat will be put in service between Mombasa, about 1,500 nautical miles down the east African coast from the Gulf of Aden, and the Seychelles Islands, 600 miles out in the Indian Ocean.

Jake Bauer, president of the company, also cited labor costs as a reason why cement hull vessels have not been built on a large scale.

"Ferro-cement compares favorably with other materials in the construction of relatively small vessels for a number of reasons," he said. "Many of our customers are impressed with the impact resistance of ferro-cement vessels. In the event of a collision, damage is usually localized, consisting of circular cracks, which facilitates easier hull repair. Another advantage of ferro-cement vessels is that if that type ship is struck below the water line, the mortar tends to cling to the steel mesh and helps keep the vessel afloat."

Concrete Technology Corp. of Tacoma, Wash. recently completed construction of the world's largest pre-stressed, reinforced concrete floating structure, a liquid propane gas storage terminal. Built for Atlantic Richfield Indonesia, Inc. for use in its Java Sea Arduna oil field, the storage facility will hold natural gas from off-shore oil wells for pickup by commercial tankers.

Constructed at a cost of $35 million, the storage facility is certified as oceangoing, but is not self-propelled. Following completion of mechanical and electrical work, the facility will be towed to its work site this summer.

Concrete Technology's vice president, John Priedeman, explained the primary advantages of using pre-stressed concrete in marine construction. "It is stronger and more durable than steel," he said. "It requires little maintenance, eliminates the need for frequent repainting and does not rust."

New applications for concrete, as illustrated by construction of this massive floating storage facility, are being developed, but only time will tell whether concrete will become a more popular and widely used building material within the maritime industry. ⚓

A Maryland builder is constructing this 90-foot ferro-cement dhow to be used in the Indian Ocean.

Movement of Army equipment to Norfolk was managed by Military Traffic Management Command. Helicopters were flown to Norfolk and vehicles and containers arrived from home bases via truck and rail for assembly before loading on four MSC controlled ships. Story on page 4.

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